SHRI SATYA PRAKASH MALAVIYA: And now my supplementary.

MR. CHAIRMAN: A very clever man.

SHRI SATYA PRAKASH MALAVIYA: Which are the agencies which have been given permission to manufacture 36 cm colour TV sets?

SHRI SHIVRAJ PATIL: M/s. GCT Electronics, M/s. Samtal, Uptron Colour Picture Tubes etc. have been given permission.

SHRI BIR BHADRA PRATAP SINGH: Sir, with the talent and potential we have got in this country in the scientific field, we should have been exporting TV sets by now. But the Minister's reply seems to be very discouraging. The demand is increasing by several million every year and day is not very far when India will perhaps be the largest TV sets having country in the world. The component manufacturing has reached 50 per cent to 60 per cent stage whereas it should have been 90 per cent by now. Will the Government consider a rapid development of facilities to the producers of different kinds of TV sets in the country so that it not only becomes self-reliant but also starts exporting TV sets, for which there is a large potential in the country?

SHRI SHIVRAJ PATIL: I have explained while replying to the previous question the attitude adopted in our country with respect to the electronic equipment and goods. It took some time for us to make everybody realize that these goods are not really employment-killing but do have employment potential and, not only that but they increase efficiency also. Once that was accepted by all, the development of the electronic industry had started. This has to be realized. Now, from assembly we are going to components, from components we are likely to go to materials, and from materials we are likely to go to technology and science. That is the way we are trying to develop this industry. It should also be realized that TVs are coming from other countries, other equipment is coming to India from other countries, because India itself is a very big market. One of the greatest attractions of India is that India is a big market. So, first of all we shall have to see that we produce enough number of TVs which would be available to our people. Certainly we would also like to see that TVs are exported to other countries also. We started with two lakhs and now we are producing about five million black and white and colour TV sets and, I think, after some time it would be possible for us to export to other countries also.

MR. CHAIRMAN: Question No. 63.

*63. [*The questioner (Dr. Ratnakar Pandey) was absent. For answer vide cols. 31 infra*].

MR. CHAIRMAN: Question No. 64. (*Interruptions***) ... what he said and what I said will not come on record.

Accord on science and technology with USSR

*64. SHRIMATI VEENA VERMA:†
SHRI A. G. KULKARNI:

Will the PRIME MINISTER be pleased to state:

(a) whether it is a fact that India and the Soviet Union have recently signed a major accord on Science and Technology and have worked out 70 projects for laboratories in the two countries;

(b) if so, what are the details thereof; and

(c) whether any cooperation was also envisaged in the field of nuclear defence research between the two countries; if so, what are the details thereof?

THE MINISTER OF STATE IN THE DEPARTMENT OF DEFENCE PRODUCTION AND SUPPLIES IN THE MINISTRY OF DEFENCE (SHRI SHIVRAJ PATIL): (a) to (c) A Statement is laid on the Table of the House.

**Not recorded.

†The question was actually asked no the floor of the House by Shrimati Veena Verma.

Statement

(a) An Integrated Long-Term Programme of Cooperation (ILTP) in Science and Technology was signed in Moscow on July 3, 1987 between India and USSR. The first meeting of the Indo-Soviet Joint Council for implementation and Coordination of ILTP was held in New Delhi on March 30-31, 1988 and 64 Projects identified under this programme were discussed.

(b) A list of the projects identified is attached **(*See* below).**

(c) No, Sir.

List of projects under Integrated Long Term programme of Cooperation in Science and Technology

BIOTECHNOLOGY AND IMMUNOLOGY

Project 1	"Studies on viral Hepatitis and B and NON-A and NON-B"
Project 2	"Production of Oral Poliomyelitis vaccine
Project 3	"Production of sub unit and synthetic peptide vaccine against F.M.D. Sheep pox and Rabies"
Project 4	Development of Immuno Diagnostics using Hybridoma/Monoclonal Anti-bodies/Radio and Non-Radio Labelled Immuno Chemicals
Project 5	Development of Immuno Diagnostics Against Important Disease of Animals (Foot and Mouth Disease, Rables Blue Tongue IBR Marke's Myccplasma) using Hybrodoma and other Technique.
Project 6	Development of Immunodiagnostic agents
Project 7	Immobilized System and Novel Bioreactor design thereof
Project 8	Penicillin strain improvement and development of downstream technology
Project 9	Improvement of Gentamycin production as well as development of economical down stream process
Project 10	Improvement of strains for industrial ethanol fermentation
Project 11	Establishment of Fine Chemicals and Biochemicals production centre
Project 12	Isolation & Purification of human plasminogen activators & cloning of plasminogen activator coding sequence in E. Coli.
Project 13	Development of Drugs from Indigenous medicinal plants against ectoparasites and bioavailability of synthetic drugs.

MATERIAL SCIENCE AND TECHNOLOGY

Project 1	Powder Metallurgy Research and Development Centre
Project 2	Development of Si-C Fibre Composite, Shaped Casting and diamond Film by CVO process
Project 3	Synthesis of Cubic Boron Nitride and application in the area of cuting tools
Project 4	Fundamental and Applied Studies related to Super Plaster forming of Commercial Alloys
Project 5	Investigations on High Temperature Superconductors.

LASER SCIENCE AND TECHNOLOGY

Project 1	Technology of Argon lasers and Argon laser Photocoagulator
Project 2	Technology and characterization of high Nconcentration laser glass
Project 3	Setting up of crystal growing facility
Project 4	Laser Material Processing

Project 5	Medical Applications of Lasers
Project 6	R & D in Semiconductor Laser
Project 7	Joint R&D in growth and characterization of laser and non-linear crystals
Project 8	Laser Spectroscopy and Photochemistry
Project 9	Studies in Laser Fusion
Project 10	R&D in laser frequency standard

CATALYSIS

Project 1	Methane conversion into value added chemicals
Project 2	Catalytic Polymerization of Olefins
Project 3	Zeolite Catalysis of Organic Chemicals Production
Project 4	FISHCER-TROPSCH SYNTHESIS

SYNCHROTRON RADIATION SOURCES

Project 1	SRS design and Development
Project 2	SRS Utilization
Project 3	Technology of Industrial Electron Accelerators

MATHEMATICS AND APPLIED MECHANICS

Project 1	Simulation of atmospheric circulation in the
Project 2	Fatigue and fracture mechanics-Theoretical and experimental studies in elasto-plastic fracture mechanics and fatigue of composites.

EARTH SCIENCES

Project 1	Quantification of Seismic Hazard in Different Parts of India
Project 2	Models of structure and dynamics of the lithosphere and Diagnostics of 'times of increased probabilities' of strong earthquakes
Project 3	Investigations of the physical processess under the phenomenon of Reservoir induced seismicity
Project 4	VLBI-QEODETIC
Project 5	Study of the crust and upper mantle structure of the most important regions of the Indian ocean lithosphere, particularly of intense deformation zone in the central Indian Ocean lithosphere
Project 6	Chemical, mineralogical and isotopic studies of volcanic and xenolithic rocs in space and time of the earth and related planets
Project 7	Study of simple haplobasaltic and natural basalt systems at pressures up to 40 kbar and varying temperatures in presence of volatiles.
Project 8	(a) Infrared and Raman spectroscopy of the anionic constitution of silicate melts (with or without such volatiles as CO_2 and H_2O) in the system foresterite-akermanite-leucite-SiO_2 at different temperatures under variable pressures (b) Experimental study of silicate glasses with or without volatiles (CO_2—and or H_2O) in the system Albite -SiO_2 —H_2O– CO_2 and Rhyolite—H_2O CO_2
Project 9	Geothemetry, geobarometry and fluid regimes of the anorthosite-geranulite (Migmatite) assemblages of Chimalpahad and Khondapalle, and an ancillary programme of experimental determination of the orthopyroxene-biotite-K-feldspar-quartz-H 20- equilibrium.

Project 10	Experimental studies for geothermobarometry of the garnet-pyroxene (+or— plagioclase and quartz) assemblages in the system CaO-FeO-Mgo-Al_2 O_3-SiO_2 (with or without Cr_2 O_3 MnO) : Application to high pressure-temperature rocks of lower crust and upper mantle.
Project 11	Characteristics of some selected mineral deposit, their genesis and distinctive environment of formation
Project 12	Modelling of complex/nonlinear elastic and electromagnetic responses of the Earth's crust.

RADIO PHYSICS AND ASTROPHYSICS

Project 1	Gamma Ray Astronomy Satellite Experiment
Project 2	High Energy Gamma Ray Astronomy
Project 3	Gamma Ray Bursts
Project 4	Radio Astronomy
Project 5	Ionospheric Modelling for Radio Communication including effects of the artificial modification of ionosphere

ECOLOGY AND ENVIRONMENT

Project 1	Ecology of Arid Zone and of Desertification-Ecological problems and prospects in the nothern part of the Aravallis and adjoining areas of the desert
Project 2	Additional areas of interest will be discussed.

CHEMICAL SCIENCES

Project 1	Chemical systhesis of pesticides, pheromones, plant growth regulators and hydroxy fatty acids
Project 2	Cnemical Synthesis and Structural Studies on Peptide Toxin
Project 3	Synthesis of antitumor, antiviral and antibacterial agents
Project 4	Carbohydrate as templates for the synthesis of biologically active compounds.

BIOLOGY

Project 1	Biology of Nucleic Acids : Nucleosome organisation on altered DNA structure and repetitive DNA sequences
Project 2	Delineation of Contribution of forces in Lectin-Carbohydrate Interactions
Project 3	Synthesis of biologically active peptides and nucleic acids
Project 4	Chemical Synthesis and Structural Studies of Oligonucleotides.

SHRIMATI VEENA VERMA: Sir, I very much welcome this long-term programme of cooperation in science and technology which is yet another important milestone in the time-tested Indo-Soviet friendship. Sir, I want to know (a) what is the progress made in the finalization of modalities for the implementation of this programme of cooperation, (b) what is the detailed plan of development of lasers for nuclear fusion and medical applications, and (c) what are the details of the project for investigations on high temperature superconductors, details of the project for the production of oral polio vaccine, the project for the production of viral hepatitis-B vaccine and plans for powder metallurgy and development centres.

SHRI SHIVRAJ PATIL: Sir, between India and the Soviet Union, there is an agreement for cooperation in the fields of economics, trade, science and technology. A long-term programme of cooperation in science and technology between India and the Soviet Union was signed in 1987 by the Prime Minister of India and the General Secretary of the Communist Party of the Soviet Union. After that, we have

selected areas in which the cooperation will take place. The areas which are selected are biotechnology and immunology, material science and technology, laser science and technology, catalysis, space science and technology, synchrotron radiation sources, water prospecting, computers and electronics. Other areas also can be taken up or we can delete these areas also. Having selected the areas, they have selected the projects also. There is a mechanism created to see that this long-term programme is implemented. That mechanism consists of a joint commission, and that joint commission is headed by Dr. C. N. R. Rao in India and one of the scientists is the Head of the State science Committee in the USSR. They have asked their colleagues to select some of the projects, and a list of the projects has been selected. About 64 projects have been selected. The subjects which were just mentioned by the hon. Member are also mentioned here. We have selected the laboratories and the scientist and the subjects. Our scientists will be going there, and their scientists will be coming here. On the selected subjects there will be working.

As to the details required by the hon. Member, it will take a long time. I think it will not be necessary for me to give all the technical and scientific details also. They are in a written form also. If the hon. Member wants, I can pass it on to her.

SHRI KAPIL VERMA: Laser for medical treatment and laser for nuclear research.

SHRIMATI VEENA VERMA: As a part of the Indo-Soviet co-operation, a high-powered electron accelerator will be install at the Bhabha Atomic Research Centre in Bombay. I want to know by what time the installation will be completed, by what time will be in operation, to what specific use it will be put, whether there will be any joint ventures between the Soviet Union and Indian industry for manufacture of electron accelerator. I also want to know whether there will be wide application of the results of the science and technology research to the Indian economy, and if so, what are the highlights?

SHRI SHIVRAJ PATIL: The question is in two parts. The first part of the question really relates to something else. I know that they are putting it up at Pune and Bombay. But all the details and the exact details are not available with me. They have to be received from the Department of Atomic Energy. It should be a separate question.

As far as the second question is concerned about what advantages are going to be of this programme, I can say that there are many advantages that would become available to us. We are trying to co-operate and work together in the areas of advanced science, blue sky science and frontier science.

We are also trying to work in the area of basic science and we are trying to work in the area which is relevant to both our countries, and the results which will be available to scientists in India as well as in the Soviet Union will be used by us for socio-economic development in India as well as the Soviet Union.

Not only that, but this is a very enlightened, noble agreement. Under this agreement the two leaders have agreed that the results which will come out of this kind of co-operation, with the sanction of both the Governments, will be made available to the entire humanity in the world at large. So, these results are going to be useful in different areas to the people in India and to the people in the Soviet Union.

SHRI A. G. KULKARNI: Sir, this agreement is so vital for this country to reach the 21st century, with the latest technology, particularly the basic sciences. In some selected areas and specific areas, it goes a long way. I do not want to repeat what my hon. colleague has stated. I would only ask you two questions:

Will this agreement which concerns the laser technology also particularly envisage technological collaboration between the

two Governments, the Government of India and the Government of USSR in space and nuclear technology? That is my specific question. If it includes the efforts to accelerate the space and technology effort, will it further accelerate our recent breakthrough in the surface-to-surface missiles which we have developed? Secondly, on a different platform I want to know about dry areas, water prospecting, etc. We have got a technological mission of that Sam Pitroda who is working on these technological missions. May I know from the Minister whether any coordination has been envisaged between this agreement and the technological mission?

SHRI SHIVRAJ PATIL: Sir this is an Integrated Long-Term Programme of cooperation in science and technology between the two countries. This is a programme. There is an agreement also and under that agreement between the two countries, this programme takes into account what is mentioned in that agreement also. It is said that the peaceful utilisation of nuclear energy, space and oceanography will also be studied and in that area also there will be cooperation. So this is a programme. That is an agreement. The agreement is wider. The programme is not wider, but it gives the details. Now, in this programme...

SHRI A. G. KULKARNI: I have asked whether there is any specific project.

SHRI SHIVRAJ PATIL: I am coming to that. In this programme no mention has been made about the cooperation in nuclear energy as such. But in this programme a mention certainly has been made about space technology and space science. A mention has also been made about water prospecting. A mention has also been made about using laser technology and other kinds of technologies also for water prospecting.

SHRI A. G. KULKARNI: I want to know the progress on both these fronts.

SHRI SHIVRAJ PATIL: This was signed in 1986. Only very recently 5 or 6 months back the two sides had come together. They have selected 64 projects and in 64 projects these things have been mentioned. These things will not give you the results in six months' time or one year's time, because this is a frontier area science research and also basic science research. So it will take time. They have given the number of visits that will be taking pace between the scientists of the two countries and the time frame has also been mentioned for different projects. There are different time frames. So, it will not be possible for me to give all these details. But I am just outlining the broad areas and the projects which have been mentioned here.

SHRI G. SWAMINATHAN: Sir, it is not clear to me regarding the technological advantages that India will be getting out of these things. May I know whether it is a mere collaboration for scientific research which will be going on between the laboratories of our country and USSR? May I also know whether any tangible results will come out of this research? Especially the hon. Minister has mentioned in his reply regarding drugs and anti-viral vaccines which will be taken up as one of the projects. As you know, Sir, anti-viral vaccine is a very important vaccine as far as India is concerned. May I know whether know-how for these drugs which are now available in USSR is very important for our country? If so, whether such projects will be taken up by both these Governments as joint sector projects or licences will be granted for individual industrialists who start such projects in India? If these projects are not started in India, then, useful purpose will be served by the mere scientific cooperation between these two countries. That is why I want a very clear understanding on this particular project.

SHRI SHIVRAJ PATIL: Sir, the cooperation between India and the Soviet Union is taking place in different areas. We are cooperating in trade and commerce. We are cooperating in industry also. In trade and commerce we exchange goods. Industry is something where we produce

the goods and cooperation in the areas of science and technology is something where we produce science and technology. Having produced science and technology, it has to be given to the industry for the development of the goods. Now, what is envisaged in this long-term programme is very, very comprehensive. First of all we would like to make use of the knowledge itself. Then, we come to the stage of conceptualising ideas we develop and then we go to the area of development of the technology and from technology under this agreement, we will be going to the area of development of instruments and equipment. Having gone to instruments and equipment, those instruments and equipment will be given to the industry also and the industry will be making use of those instruments and equipments. For making instruments and equipments, engineering-side is necessary. Engineering is part of science and technology. Engineering side will also be developed. Now beyond that comes the area of industry. Now here it is science and technology. We will be giving it to the Indian industry. We will be giving it to the Soviet industry. It will be given to other industries also and in this fashion, we will be making use of this programme. This is a very very comprehensive programme. Then you asked about manufacturing of vaccine. Now the technology which is required for the manufacturing of vaccine will be developed and it will be given to the Indian industry as well as to the Soviet industry. But if you want to establish an industry as such in the country, we can get the technology which is already available there and start, but we are not content with the technology which is available. We would like to to go beyond that. We would like to have a vaccine which gives immunity against so many diseases. It is not only against Polio but it gives immunity against cancer and immunity against other diseases. In one dose, we would be able to do so. This is the kind of method which we have to adopt. (*Interruptions*) . . . .

SHRI N. E. BALARAM : Sir, I would like to put the same question again because the answer was something different. (*Interruption*)

MR. CHAIRMAN: No, he has put the question. Shri Kapil Verma.

SHRI KAPIL VERMA: Sir, after the Joint Council meeting under the agreement, academician Marchuk would make the welcome announcement that Indian scientists will be involved in the prestigious Probos project to the Planet Mars and Indian scientists will be involved in it. This will be a collaborative effort of 24 countries. I want to know what progress has been made in respect of selection of Indian scientists; whether they are being sent to Soviet Union for that purpose and more importantly, whether we are going to get any benefits from this experiment and also Mr. Marchuk said that a launching-site will be established in India. I would like to know whether any progress has been made in that direction. It was seen in today's paper that two big Soviet atomic reactors of 1,000 megawatts would be established in India. I would like to know whether the location has been decided.

SHRI SHIVARAJ PATIL: Sir, I have already said that there will be cooperation in the area of Space Science and Technology. We all know that only very recently, we launched IRS, the Indian Remote Sensing Satellite from the Soviet Satellite Launching base and that Satellite is revolving around the earth and giving information to us. We all know that one of the Indian Cosmonauts was launched and there are other areas in which also, we have been collaborating with each other. Now as to the exact question which you have put, well, they have defined the projects on which they will be working but I do not see the project which you have mentioned in the list of the projects which they have given... (*Interruptions*)...

SHRI KAPIL VERMA: Mr. Marchuk made the announcement immediately at the end of his conference that the Indian scientists are going to be involved in it.

SHRI SHIVRAJ PATIL : I have a list of the projects. Now the procedure which is followed is that they suggest certain projects, we suggest certain projects. They sit together and they decide upon the

projects on which they will be working immediately. They decide upon the working of other projects also.

SHRI KAPIL VERMA: Is there any information to give?

SHRI SHIVRAJ PATIL: That is exactly what I am saying that I have a list of the projects which has been given to me. I did not find projects in the list which you mentioned...

SHRI KAPIL VERMA: But Marchuk announced.

SHRI SHIVRAJ PATIL: You have to believe what I say rather than what has been said in the newspapers. (*Interruptions*)...

SHRI JAGESH DESAI: You give us the list. (*Interruptions*)...

SHRI SHIVRAJ PATIL: It is a list of 10-15 pages. I will give it to you later on. It is not possible to give it to you right now. It will take some time. But I can say if it is necessary and if it is acceptable to both sides, those areas in which it should be possible for us to work... (*Interruptions*)...

SHRI KAPIL VERMA: Space research is one of the projects.

SHRI SHIVRAJ PATIL: Space research is one of the areas but space research is the area in which there are so many projects and not one project. We should understand that. As far as the establishment of atomic reactors is concerned... (*Interruption*)...

MR. CHAIRMAN: Dr. Poddar. (*Interruptions*)...

Question Hour is over now.

WRITTEN ANSWERS TO QUESTIONS

Indo-Pak relations

*63. DR. RATNAKAR PANDEY: Will the Minister of EXTERNAL AFFAIRS be pleased to state:

(a) whether any request has recently been received from the Govt. of Pakistan for further talks with a view to normalising Indo-Pak relations; and

(b) if so, what are the details thereof?

THE MINISTER OF STATE IN THE MINISTRY OF EXTERNAL AFFAIRS (SHRI K. NATWAR SINGH): (a) and (b) Both India and Pakistana have pursued the possibilities of talks. These have envisaged talks between the respective Foreign, Home and Defence Secretaries to sort out problems in their respective spheres of duty. It is hoped that the dates of at least some of these talks will be finalised in the near future.

Chakma refugees living in India

*65. SHRI B. SATYANARAYAN REDDY: Will the Minister of EXTERNAL AFFAIRS be pleased to state:

(a) what is the total number of Chakma refugees from Bangladesh now taking shelter in Tripura and other parts of India and since how long they are in India;

(b) the total expenditure incurred by the Central and State Governments for problems in their respective spheres of duty, refugees since their arrival in India;

(c) the steps taken and progress made for the speedy return of these Chakma refugees to Bangladesh with dignity and honour;

(d) what are the main obstacles in not returning these refugees to their own land; and

(e) by when these refugees are likely to return to Bangladesh and whether the Bangladesh Government are prepared to provide safety to their lives and properties on their return, if so, the details thereof?

THE MINISTER OF STATE IN THE MINISTRY OF EXTERNAL AFFAIRS (SHRI K. NATWAR SINGH): (a) As on the 9th February, 1988, there were 45,782 Bangladesh Chakma refugees in camps in Tripura. The present influx of Chakma refugees from Bangladesh began in April, 1986.

(b) Upto March 1988, the Central Government had spent a sum of Rs. 791.234 lakhs on the maintenance of the refugees.

(c) to (e) Government have been maintaining continuous diplomatic contact with